Traffic Commission Meeting
December 5, 2005

Agenda Item No. 6A

TO: Traffic Commission

FROM: Ted Semaan, Manager of
Transportation Planning, Engineering Permits and Records Division

SUBJECT: Traffic Impact Report/Study – Methodology and analysis

RECOMMENDATION

The Community Development Director recommends that the Traffic Commission receive and file the staff report on the traffic impact report/study methodology and analysis.

BACKGROUND

Questions have been raised on various occasions by both public officials and the general public regarding the traffic impact report/study and the methodologies used in evaluating the traffic impacts by a proposed development project. Since the traffic study and its conclusions are some of the critical factors in the decision making process, it is important to explain the methodology and what is involved in a traffic impact report/study. This report will walk through a typical traffic impact report/study including its analytical process and methodologies while attempting to clarify general questions about the traffic study.

ANALYSIS

A traffic impact report/study is typically conducted to determine if a proposed development project may have impacts on the surrounding roadway system. Given that different land uses generate different number of vehicular trips, each proposed project affects existing roadway systems differently. High intensity land use, for instance, would burden the existing roadway capacity while less intensity land uses would have minimal impacts on the traffic characteristics. As provided in the Trip Generation Handbook published by the Institute of Transportation Engineers (ITE),

a commercial use such as a super market (ITE code 850) tends to generate more traffic than a single family detached home (ITE code 210). A typical supermarket generates 102.24 trips per every 1,000 square feet of gross floor area per day while a detached single family dwelling unit generates 9.57 trips per day. The rates provided in the ITE trip generation handbook are the results of various studies and surveys over several years of data collection and experience. Attachment A illustrates different types of land uses with corresponding traffic generation rates.

Further, the traffic study can forecast the level of traffic impacts in quantifiable terms along with the ability to identify specific intersections likely to be impacted. This information, therefore, can be of great help in planning necessary mitigation measures or circulation enhancements.

To determine whether or not a traffic study is necessary for a proposed project, City staff would conduct an initial evaluation to determine if the proposal would have any potential adverse impacts on traffic. Should this initial evaluation determine that the proposed project could have a potential impact, the developer will be required to prepare a complete traffic impact report to be submitted for review.

For large development projects, City staff would typically meet with the developer and his/her traffic engineers to discuss and evaluate the scope of the traffic impact report including but not limited to the periphery of the traffic circulation patterns, traffic characteristics before and after the project development, potential impacts, proposed mitigation measures, etc.

In keeping with the regional efforts to reduce the overall number of trips as identified in the Los Angeles County Congestion Management Program (CMP), the Circulation Element of the Torrance General Plan identifies options to address the increased tripmaking including efficient use of existing transportation facilities through increasing physical capacity, implementing lower cost transportation systems management (TSM) projects or to make more efficient use of the existing facilities through the Transportation Demand Management (TDM).

The purpose of the CMP, a state-mandated program, is to address the impact of local growth on the regional transportation system. The program is also intended to assess the overall performance of the highway system overtime and to allow local jurisdictions to measure their success at minimizing traffic congestion with “before and after” data for evaluating congestion mitigation measures. To accomplish this, a set of specific guidelines & standards, monitoring system and conformance procedures have been established for all of the jurisdictions within the region to follow.

Traffic Impact Report/Study – Core Elements

Introduction: Each report begins with an introductory section which explains the report's intent and scope. It will address its effort to satisfy the goals and objectives set forth by the City and the CMP. A detailed overview of the project type, size and location will also be described. Other relevant information provided as background information typically includes the parameters of the traffic study with a list of specific roadway segments and specific number of street intersections to be studied.

Project Description: Following the introduction section, the project description is addressed in more detail about the existing land use, traffic characteristics and roadway conditions. The vicinity map and site plan are typically included in this section as a visual aid to explain the scope of the report. They provide graphical information in terms of the affected roadway segments as well as the internal circulation within the project site itself. Detailed characteristics of current street segments within the project's periphery are identified including street classifications, the number of lanes, current speed limits and parking restrictions, etc.

Background Traffic Conditions: Existing traffic characteristics generated by previously approved projects will also be identified as background information (see Attachment B). The purpose is to give the readers a broader perspective concerning the current traffic conditions collectively generated by similar or related projects on the city's roadway system. A list of all recently approved and on-going projects including their types, sizes, locations and trip generations will be provided.

The first set of the collected traffic data to be presented in the report include traffic volume and turning movement counts. These data will give the actual current traffic volumes for specific street segments and the number of vehicles at street intersections during peak driving hours on a typical weekday. These raw data are an integral part for the traffic report as they will be used to analyze the current traffic & intersection conditions and to determine if these intersections will be impacted as a result of the proposed development.

Existing Intersection Conditions: The first analysis of the existing traffic condition is the existing level of service (LOS) at signalized street intersections specifically identified in the report. In order to determine the LOS, an Intersection Capacity Utilization (ICU) technique is commonly used. This technique is a conventional analytical method used by many traffic engineers and is the referenced method in the CMP. The ICU analysis is designed to estimate the "volume to capacity" relationships for critical

conflicting movements at signalized intersections. The "volume to capacity" relationship calculations yield numerical data which will then be translated into the LOS (see Attachment C). This analytical methodology will also be used to analyze the projected LOS at the same intersections.

Since the LOS is broken down into various levels represented by an alphabetical code, the definition of each level is described in the report. As described in the City General Plan and CMP guidelines, the LOS ranges from A to F where the LOS A indicates a free flow of Traffic, while LOS F indicates extreme traffic congestion (See table 1).

Table 1

LOS	Maximum ICU	Description
A	$\leq$ 0.600	Free flow (Excellent)
B	0.601 – 0.700	Stable flow (Very good)
C	0.701 – 0.800	Stable operations (Good)
D	0.801 – 0.900	High-density but stable flow (Fair)
E	0.901 – 1.000	Operating conditions at or near the capacity level (Poor)
F	> 1.000	Forced or breakdown flow (Failure)

For the City of Torrance as identified in the Circulation Element of the General Plan, the desired LOS is "D."

Project Traffic Characteristics: Following the existing LOS analysis is the project's traffic distribution forecast. This section typically addresses the projected traffic generation by the proposed development with the corresponding trip generation rates (see Attachment D). This would give the reader the first glimpse as to how many vehicular trips will be generated by the project.

In this section, the report will also address the projected trip distribution and assignment using the same traffic generation rates. The data based on the forecasted vehicular trips during peak hours will be transferred graphically onto a street lay out (see Attachment E). The trip distribution layout depicts the number of vehicles entering and exiting street intersections within the project's study area during AM and PM peak periods. The traffic distribution layout will show the projected traffic distribution patterns along street segments and through various street intersections. The traffic movement data from this layout indicates the number of vehicles making left turns, right turns or going thru an intersection. This information will then be used to calculate the projected LOS (see Attachment C).

Traffic Impact Analysis: The next part of the traffic report will address the traffic impact analysis including impact criteria and thresholds and traffic impact analysis scenarios. This component of the traffic study is the determination of the potential impacts on the current LOS at critical street intersections during peak hours based on the CMP and the City's established standards and traffic impact criteria. A set of scenarios for future traffic conditions and LOS with and without the development will also be addressed. Should there be any significant impacts in accordance with the CMP criteria at a street intersection as a direct result of the proposed project, a set of recommendations will be proposed to mitigate the future traffic conditions. All mitigation measures proposed will be reviewed by the City which may require additional mitigation measures depending on the nature of the traffic impacts.

Summary of Findings and Conclusions: This section of a traffic impact report will summarize all of its findings and necessary mitigation measures. The main points made within the report will be briefly recapped including existing traffic conditions, current and projected trip generation, current and projected traffic conditions, specific improvements and CMP impacts.

Cumulative Impacts and Development Impact Fees

As stated earlier, a list of related/on going projects is often included in the traffic impact report. The purpose of this list is to illustrate the cumulative traffic impacts generated by various projects in relation to the proposed project's potential traffic generation. Within a broader context, a single project, oftentimes, generates a negligible amount of new traffic to have any significant impacts on the overall traffic conditions. Nevertheless, the City needs to maintain its objectives identified in the General Plan Circulation Element and to comply with the regional CMP plan. Since the City cannot designate significant impacts on a development based on other development impacts, the City has created the Development Impact Fees (DIF) as a funding mechanism to collect the "fair share" from each developer to improve and maintain the existing roadways and to keep the traffic operation at an acceptable level.

In August 2005, the City adopted a Development Impact Fees into law which subjects developers of certain types of developments to incremental fees to address incremental impacts without unfairly penalizing any individual entity. The collected funds will be used, among other things, to improve the citywide roadway system. Unless there is a reasonable nexus, the developer will still be required to provide necessary improvements directly linked to the development in addition to the mandatory Development Impact Fees.

In conclusion, the traffic impact report is an important document that states the current roadway conditions and if or how a development project would have any adverse impacts on the city's roadway systems. Necessary mitigation measures will also be proposed in the report or be required by the City to be implemented to correct any potential adverse traffic impacts directly bring upon by the new developments. In a larger perspective, a vast majority of individual developments by itself contribute very little to the existing roadway systems. Without DIF, these individual projects would be considered irrelevant and would not have been accountable for the overall traffic impacts. DIF requires each development to pay its fair share for their contribution for necessary improvements.

Respectfully submitted,

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COMMUNITY DEVELOPMENT DIRECTOR

By _____
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Attachments:
A) Traffic Generation Rates By Land Use
B) List of Approved Projects' Trip Generation
C) Intersection Capacity Utilization
D) Project Traffic Generation Forecast
E) Sample Trip Distribution Layout

Exhibit:
A) Congestion Management Program For Los Angeles County
B) Trip Generation Handbook